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28 February 1974

MILITARY STANDARD

PROVISIONS FOR EVALUATING QUALITY

OF

CAPS, GARRISON, MEN'S

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DEPARTMENT OF DEFENSE

WASHINGTON, DC 20301

Provisions for Evaluating Quality of Caps, Garrison, Men's

MIL-STD-901A

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Natick Research and Development Command (GL), ATTN: DRXNM-TDC, Natick, MA 01760, by using the self addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FOREWORD

This standard provides a standardized procedure for evaluating quality of men's garrison caps procured by the Department of Defense.

The objectives of this standard are to:

a. Provide standard description for defects.
b. Standardize examination requirements.

Specifications that will reference this standard are:

SPECIFICATION		TITLE
MIL-C-3261	-	Caps, Flight, Air Force, Blue
MIL-C-17614	-	Cap, Garrison, Man's
MIL-C-21181	-	Cap, Garrison, Man's: Wool, Serge, Green
MIL-C-21295	-	Cap, Garrison: Men's, Uniform Twill; Cotton, Khaki
MIL-C-24012	-	Caps, Garrison: Men's, Tropical Wool and Polyester/Wool
MIL-C-43419	-	Cap, Garrison, Polyester/Wool, Tropical, Army Green 344

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CONTENTS

Paragraph		Page
1.	SCOPE	1
1.1	Purpose	1
1.2	Application	1
2.	REFERENCED DOCUMENTS	1
2.1	Issues of documents	1
3.	DEFINITIONS	1
3.1	Fabric defects	1
3.2	Knots and slubs	1
3.3	Quality assurance terms and procedures	1
3.4	Open seam	2
3.5	Raw edge	2
3.6	Outside-inside	2
3.7	Puckering	2
4.	GENERAL	2
5.	SAMPLE AND INSPECTION PROVISIONS	2
5.1	End item examination	2
5.2	Dimensional examination	3
5.3	Packaging inspection	3
6.	INSPECTION	4
6.1	Inspection procedures	4
6.2	Initiation of inspection	4
6.3	Continuation of inspection	4
6.4	Switching procedures	4
6.4.1	Normal to tightened	4
6.4.2	Tightened to normal	4
6.4.3	Normal to reduced	4
6.4.4	Reduced to normal	5
7.	NOTES	

TABLES

I	Sampling provisions for end item examination	6
II	Classification of defects	7 thru 12

1. SCOPE

1.1 Purpose. The purpose of this standard is to provide standardized provisions for evaluating the quality of garrison caps for men.

1.2 Application. This standard will be made applicable to contracts by reference in MIL-C-3261, MIL-C-17614, MIL-C-21181, MIL-C-21295, MIL-C-24012 and MIL-C-43419.

2. REFERENCED DOCUMENTS

2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this standard to the extent specified herein.

STANDARDS

FEDERAL

FED-STD-4 - Glossary of Fabric Imperfections

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-109 - Quality Assurance Terms and Definitions

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. DEFINITIONS

3.1 Fabric defects. Definitions of fabric defects, where applicable, shall be in accordance with FED-STD-4.

3.2 Knots and slubs. Only knots and slubs that exceed the limits specified in the basic cloth specification shall be scored as defects in evaluating quality of the finished cap.

3.3 Quality assurance terms and procedures. Definitions of quality assurance terms and procedures, where applicable, shall be in accordance with MIL-STD-105 and MIL-STD-109.

3.4 Open seam. A seam shall be classified as open when one or more stitches joining a seam are broken or runoff, or when two or more continuous skipped stitches occur. Double stitched seams are considered open when one or both rows of the stitching are open.

3.5 Raw edge. A raw edge is defined as any edge not finished as specified including any protruding edge on the outside of the cap.

3.6 Outside-inside. The terms "outside" and "inside" as used in this standard are defined as follows:

Outside - Any part of cap that is visible when the cap is examined from a distance of 3 feet (1 m) at shoulder level height and positioned as worn. The cap shall be completely rotated.

Inside - Any part of cap that is not visible when the cap is examined from a distance of 3 feet (1 m) at shoulder level height and positioned as worn. The cap shall be completely rotated.

3.7 Puckering. In the course of the sampling examination, seams suspected of being puckered shall be examined with the cap lying flat on the inspection table at a distance of 3 feet (1 m) and shall be rated in comparison with the AATCC photographic comparative rating (see 7.1) for seams. Puckering on a major portion of the suspected seam that equals or is worse than rating 4 for single needle seams or 4 for double needle seams shall be scored as a puckered seam.

4. GENERAL

4.1 This standard contains the provisions for end item examination, dimensional examination, and packaging inspection for garrison caps. If there are any inconsistencies between the requirements of the appropriate cap specification and the provisions of the standard, the cap specification shall control. This standard assigns to the listed defects, point values of 1, 2, or 3 depending on degree of severity. The higher point values are assigned to those defects having more detrimental effect on the appearance or serviceability of the item.

5. SAMPLE AND INSPECTION PROVISIONS

5.1 End item examination. The caps shall be examined and all defects shall be penalized as indicated in table II of this standard. The sample size shall be based on lot size, and the acceptance values for 3 and 2 point defects and total (3, 2, and 1 point) defects shall be as specified in table I. The sample unit shall be one finished cap. The lot shall be unacceptable if:

a. The point value for 3 and 2 point defects exceeds the applicable maximum acceptable point value.

or

b. The point value for total (3, 2 and 1 point) defects exceeds the applicable maximum acceptable point value.

5.2 Dimensional examination. The sample size for dimensional examination shall be based on lot size as shown in the table below. The caps shall be examined for conformance to the dimensional requirements cited in the table of measurements of the appropriate cap specification. When a measurement deviates from a dimension and tolerance specified, the cap shall be penalized 1 point. The lot shall be unacceptable if the total point value resulting from this examination exceeds the maximum acceptable point value for the lot. Each size of cap present in the lot should be represented in the sample selected for this examination.

Sampling provisions for dimensional examination

Lot size	Sample Size	Maximum acceptable point values
Up thru 500	8	0
501 thru 3,200	13	1
3,201 thru 35,000	20	2
35,001 and up	32	3

5.3 Packaging inspection. An examination shall be made to determine that preservation-packaging, packing, and marking requirements are in compliance with section 5 of the appropriate cap specification. Defects listed below shall be scored 1 point. The sample size for this examination shall be five shipping containers fully prepared for delivery with the exception that they need not be closed. Defects of closure listed below shall be examined on shipping containers fully prepared for delivery. The lot shall be unacceptable if 1 or more points are scored for this examination.

Examine	Defect
Marking (exterior and interior)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing, damaged, or not as specified.
Workmanship	Inadequate application of components, such as: incomplete closure of container flaps, loose strapping, improper taping or improper adhesive application, inadequate stapling. Open and noncontinuous heat sealed seams and closure of polyethylene bag. 1/ Alternative closure of polyethylene bag not provided with tuck or reverse flap. 1/ Omission of vent hole in polyethylene bag. 1/ Incorrectly fabricated bag. 1/ Bulged or distorted container.

Examine	Defect
Content	Number of intermediate packages per shipping container is more or less than required. Number of caps per intermediate package is more or less than required. Size shown on one or more caps not as specified on shipping container. 2/
Preservation (Napthalene flakes)	Improperly applied or missing. 1/

1/ When applicable.

2/ For this defect, one intermediate package from each shipping container in the sample shall be examined.

6. INSPECTION

6.1 Inspection procedures. Inspection procedures shall be as specified in MIL-STD-105 except where otherwise indicated in this document.

6.2 Initiation of inspection. Normal inspection shall be used at the start of inspection unless otherwise directed by the responsible procurement quality assurance element administering the contract.

6.3 Continuation of inspection. Normal, tightened, or reduced inspection shall continue unchanged on successive lots except where switching procedures in 6.4 require a change.

6.4 Switching procedures.

6.4.1 Normal to tightened. When normal inspection is in effect, tightened inspection shall be instituted when two out of five consecutive lots have been rejected on original inspection (i.e., ignoring resubmitted lots for this procedure).

6.4.2 Tightened to normal. When tightened inspection is in effect, normal inspection shall be instituted when five consecutive lots have been considered acceptable on original inspection.

6.4.3 Normal to reduced. When normal inspection is in effect, reduced inspection shall be instituted providing that all of the following conditions are satisfied:

a. The preceding 10 lots have been on normal inspection and none have been rejected on original inspection; and

b. The total number of points for 3 and 2 point defects in the samples from the preceding 10 lots is equal to or less than 60 percent of the total maximum acceptable point values for 3 and 2 point defects from the preceding 10 lots; and

c. The total number of points for 3, 2, and 1 point defects in the sample from the preceding 10 lots is equal to or less than 75 percent of the total maximum acceptable point values for 3, 2, and 1 point defects from the preceding 10 lots; and

d. Production is at a steady rate: and

e. Reduced inspection is considered desirable by the procurement quality assurance element administrating the contract.

6.4.4 Reduced to normal. When reduced inspection is in effect, normal inspection shall be instituted if any of the following occur on original inspection:

a. A lot is rejected; or

b. A lot is considered acceptable but exceeds the applicable first value (see 1/ to table I); or

c. Production becomes irregular or delayed; or

d. Other conditions warrant that normal inspection be instituted.

7. NOTES

7.1 The AATCC Photographic Comparative Rating of Single and Double Needle Seams (Method 88B, two photos) is available from:

The American Association of Textile Chemists and Colorists
P.O. Box 12215
Research Triangle Park, NC 27709

TABLE I. Sampling provisions for end item examination

	Lot size	Sample size	Maximum acceptable point values 3 & 2 point defects	3, 2 & 1 point defects
Normal inspection	Up thru 90	20	3 points	9 points
	91 thru 150	32	5 points	13 points
	151 thru 280	50	8 points	19 points
	281 thru 500	80	13 points	29 points
	501 thru 1200	125	18 points	41 points
	1201 thru 3200	200	26 points	60 points
	3201 thru 10,000	315	36 points	86 points
	10,001 thru 35,000	500	55 points	127 points
	35,001 and over	800	78 points	183 points
Tightened inspection	Up thru 150	32	3 points	10 points
	151 thru 280	50	5 points	15 points
	281 thru 500	80	8 points	23 points
	501 thru 1200	125	13 points	35 points
	1201 thru 3200	200	21 points	54 points
	3201 thru 10,000	315	31 points	81 points
	10,001 thru 35,000	500	47 points	122 points
	35,001 and over	800	70 points	183 points

	Lot size	Sample size	Maximum acceptable point values 3 & 2 point defects 1/	3, 2 & 1 point defects
Reduced inspection	Up thru 280	20	3-10 points	9 points
	281 thru 500	32	5-13 points	13 points
	501 thru 1200	50	8-16 points	19 points
	1201 thru 3200	80	13-21 points	22 points
	3201 thru 10,000	125	18-26 points	41 points
	10,001 thru 35,000	200	26-34 points	60 points
	35,001 and over	315	35-44 points	86 points

1/ If the first value is exceeded but the second value has not been exceeded, accept the lot but reinstate normal inspection (see 6.4.4b). The second value is the maximum acceptable point value.

TABLE II. Classification of defects

Defect	Point value
I. MATERIAL DEFECTS AND WORKMANSHIP DAMAGE	
a. Any hole, cut, tear, smash, mend, needle chew, drill hole, or open place:	
1. On outside (see 3.6) (longest dimension in any direction):	
(a) - up to 1/4 inch (6 mm), inclusive	2
(b) - more than 1/4 inch (6 mm)	3
2. On inside (see 3.6) (longest dimension in any direction):	
(a) - up to 1/4 inch (6 mm), inclusive	1
(b) - more than 1/4 inch (6 mm)	2
b. Loose yarn, snagged yarn, misweave, float, coarse yarn, area of no dye penetration, dye streak, missing yarn, broken yarn, thin place, shade bar, or woven in waste:	
1. On outside (longest dimension in any direction):	
(a) - up to 1/4 inch (6 mm), inclusive	1
(b) - more than 1/4 inch (6 mm)	2
c. Permanent fold, pleat, or crease in cloth (when caught in seaming or stitching):	
1. On outside	3
d. Leather:	
1. Cracked, cut, or thin weak spot	2
2. Spongy, flanky, or stretched (showing a coarse grain and uneven appearance)	2
3. Any scar, wrinkle, or scratch visible at a distance of 3 feet (1 m)	2
4. Finish on leather peeling off	2
5. Needle chews in leather	2
e. Knot or slub (see 3.2) on outside	2
II. SHADED PART	
a. On outside:	
1. Variation in shade within a part or between two or more parts	2
III. PRESSING	
a. Burned or scorched	3
b. Blocking or pressing omitted	2
c. Poorly pressed	1
d. Pressing impression or gloss on outside of cap (to be scored only when condition exists on major portion of cap)	1
e. Bottom edge of cap not pressed as specified	1
f. Curtain at front or back edge not pressed as specified	1

Defect	Point value
IV. CLEANLINESS	
a. Any spot or stain on outside visible at 3 feet (1 m) (largest dimension in any direction):	
1. Up to 1/4 inch (6 mm) inclusive	2
2. More than 1/4 inch (6 mm)	3
b. Any marking exposed or visible on outside	3
c. Thread ends on inside and outside:	
1. More than one but not more than three not trimmed to less than 3/8 inch (10 mm)	1
2. More than three not trimmed to less than 3/8 inch (10 mm)	2
3. Three or more loose threads not removed	1
d. One or more shade or size tickets not removed	1
e. Thread end caught for a distance of more than 1/4 inch (6 mm) in line of stitching on outside	1
f. Visible basting thread not removed	1
V. COMPONENT AND ASSEMBLY	
a. Any component part or operation omitted (unless otherwise classified herein)	3
b. Any component not as specified	3
c. Any component part tight, twisted, distorted, pleated, or full (unless otherwise classified herein)	2
d. Any operation not as specified (unless otherwise classified herein)	2
VI. CUTTING	
a. Any component part not cut in accordance with specified pattern, directional lines on patterns, or not in accordance with specification requirements	3
b. Twill line of any outside part not running in specified direction	3

TABLE II. Classification of defects (cont'd)

Defect	Point value
VII. SEAMS AND STITCHING	
a. Accuracy of seaming:	
1. Seam puckered (score only when on major portion of seam) (see 3.7)	1
2. Seam irregular, pleated, or wavy	2
3. Part caught in any unrelated operation or stitching	2
4. End of stitching when not caught in another seam or stitching backtacked less than 1/4 inch (6 mm); or end of continuous stitching overlapped less than 1/2 inch (13 mm)	1
5. Stitching overlapping end of thread break less than 1/2 inch (13 mm)	1
6. Optional basting or holding stitching not removed or visible on outside of cap	1
7. Not specified color or varying shades of thread used on outside	2
b. Gage of stitching and seam allowance:	
1. Edge, top, or raised stitching sewn too close to edge resulting in damage to cloth	2
2. Seam allowance not as specified by 1/16 inch (2 mm) or more. (Score only when condition exists on more than 1/2 the length of the seam)	1
3. Irregular or not within range specified or varies more than 1/16 inch (2 mm) when no range is specified. Score only when condition exists on major portion (i.e., more than 1/2 the length) of the seam	1
c. Open seam:	
1. On outside:	
(a) - up to 1/4 inch (6 mm)	1
(b) - 1/4 inch (6 mm) up to and including 1/2 inch (13 mm)	2
(c) - more than 1/2 inch (13 mm)	3
2. On inside:	
(a) - 1/4 inch (6 mm) up to and including 1/2 inch (13 mm)	1
(b) - more than 1/2 inch (13 mm)	2
d. Raw edge: (see 3.5)	
1. On outside (excluding left end of curtain):	
(a) - up to 1/4 inch (6 mm) inclusive	1
(b) - more than 1/4 inch (6 mm) up to and including 3/4 inch (19 mm)	2
(c) - more than 3/4 inch (19 mm)	3

TABLE II. Classification of defects (cont'd)

Defect	Point value
VII. SEAMS AND STITCHING (cont'd)	
2. On inside:	
(a) - 1/4 inch (6 mm) up to and including 1/2 inch (13 mm)	1
(b) - more than 1/2 inch (13 mm) up to and including 1 inch (25 mm)	2
(c) - more than 1 inch (25 mm)	3
3. Raw edge on inside lining along bottom edge more than 1 inch (25 mm)	1
e. Seam and stitch type:	
1. Not specified seam or stitch type	2
2. Any line of stitching omitted	3
3. Any line of stitching not beginning or ending where specified (unless otherwise classified herein)	1
4. Looper thread of 401 stitch type on outside	3
f. Stitch tension:	
1. Loose tension resulting in a loose seam	3
2. Loosely exposed loops of lower or top thread on edge, top, or raised stitching	2
3. Tight tension (stitches break when normal strain is applied in the direction of the seam or stitching)	3
g. Stitches per inch (score only when condition exists on more than 1/2 the length of seam):	
1. More than the maximum specified	1
2. Less than the minimum specified:	
(a) - by one or two stitches	1
(b) - by three or more stitches	2
h. Runoff, skipped, or broken stitch:	
1. Joining seam - use (open seam) classification	-
2. Edge, top, or raised stitching:	
(a) - 1/4 inch (6 mm) up to and including 3/4 inch (19 mm)	1
(b) - more than 3/4 inch (19 mm)	2
VIII. EYELET	
a. One or more omitted or added	3
b. Chipped, broken, cracked, split, or bent	3
c. Loose or raw edges exposed around edges of eyelet on outside	3
d. Not securely clinched or clinched too tightly cutting the fabric	3
e. Positioned other than as specified	2

TABLE II. Classification of defects (cont'd)

Defect	Point value
IX. SWEATBAND	
a. Omitted	3
b. Short or tight, causing puckering, gathering, or pleats on curtain	3
c. End of sweatband not overlapped as specified, or not finished as specified	1
d. Finished width not as specified	1
e. Joining seam of sweatband not positioned as specified from either side of back seam of cap	1
f. Upper edge of cloth sweatband not turned under and stitched to crown side	1
g. Sweatband not of uniform width along major portion of sweatband	1
h. Lower edge of sweatband exposed beyond rolled edge of curtain	2
i. Zig-zag stitching at overlapped end of sweatband catching any other part of the cap (when applicable)	1
j. Lower edge of sweatband not positioned above bottom rolled edge of curtain as specified	1
X. CROWN PIECE (TOP CROWN)	
a. Depth of fold at center not as specified	2
b. Top edge poorly shaped or puckered	2
c. Tapering at each end not as specified	2
d. Width not as specified	1
e. Top crown seam offset from center:	
1. 1/8 inch (3 mm) up to and including 1/4 inch (6 mm)	1
2. More than 1/4 inch (6 mm)	2
XI. COMBINATION IDENTIFICATION AND SIZE LABEL	
a. Missing, incorrect, or illegible	2
b. Not securely caught in stitching	1
c. Positioned less than 1/2 inch (13 mm) or more than 1-1/2 inches (38 mm) to the right or left of the center of the back; or size marking not visible beyond edge of sweatband in finished cap	1
XII. SIDE PIECES	
a. Twisted, full, puckered, or distorted	2
b. Top edge poorly shaped or puckered	2
c. Raise or top stitching on top seam omitted	2
d. Side piece joining to curtain tight, resulting in fullness on curtain	2
e. Point not fully forced out (unless otherwise classified herein)	1

TABLE II. Classification of defect: (cont'd)

Defect	Point value
XIII. CURTAIN	
a. Top edge poorly shaped	2
b. Top edge long or stretched, causing curtain to stand away from side of cap	2
c. Overlap at front of cap out of alignment with front seam by more than 1/4 inch (6 mm)	2
d. Excessive fullness, puckering, or distortion on side piece or on bottom edge of curtain	3
e. Overlap on front of cap reversed, i.e., right side overlapping left side, as worn	3
f. Finished left end of curtain from center front of cap not as specified	3
g. Underply of curtain exposed on front of curtain	2
h. Top edge of curtain not positioned tightly against the cord edge of braid	3
XIV. BRAID ON CURTAIN	
a. Tight, causing excessive puckering or fullness on curtain	2
b. Corded edge irregular in width, or flat section of braid exposed beyond edge of curtain	2
c. Loose, causing curtain not to lie smoothly	2
d. End of braid on short end of curtain extending into and caught in the seaming of curtain to bottom edge of crown side	2
e. Edge frayed	3
XV. LINING AND INTERLINING	
a. Tight, short, twisted, or distorted, causing any distortion on outside of cap	3
b. Overedge stitching along bottom edge of side piece and lining omitted	2
c. Front and back seams of interlining not free from the side crown seams	1

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Navy - SA
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